



Case Report

The shooter bias: Replicating the classic effect and introducing a novel paradigm

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HIGHLIGHTS

- Previous evidence of shooter biases regarding Arabs and Muslims is inconclusive.
- We report two high-powered studies investigating shooter biases in Germany.
- Results provide evidence for threat-associated responses toward Arabs and Muslims.
- We introduce a novel task designed to assess threat-related responses.

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ABSTRACT

How does characterizing a group as hostile and dangerous shape behavior? We present two high-powered experimental studies, a close and a conceptual replication of the 'Police Officer's Dilemma' (Correll et al., 2002). Experiment 1 ($N = 164$)—a close replication—uses the original shooter task with Arab-Muslim targets. Participants showed a so-called *shooter bias*: A significant interaction in reaction times with faster 'shoot' responses for armed Arab-Muslim targets compared to armed White targets ($\eta_p^2 = .11$, 90% CI [.04; .18]). This provides evidence that the shooter bias is robust against context variations. Experiment 2 ($N = 165$)—a conceptual replication and extension—investigates whether this effect generalizes to other threat-related behavior. In a novel 'avoidance task' with Turkish and White German targets, participants 'avoid' armed targets carrying knives and 'approach' unarmed targets carrying innocuous objects. Again, we observed a significant interaction effect: Reaction times were faster for armed Turkish targets, but slower for unarmed Turkish targets as compared to White German targets ($\eta_p^2 = .19$, 90% CI [.11; .27]). Results are interpreted as an *avoidance bias*—an effect almost twice as large as in the original shooter task. We discuss that the avoidance task may be cognitively more demanding than the shooter task and that the avoidance task may provide a more subtle measure of bias in threat detection. This may lead participants to exert less behavioral control. Taken together, this research highlights that threat stereotypes have powerful influences on judgment and behavior, with the potential to disrupt intergroup interactions.

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1. Introduction

In many societies, ethnic outgroups are associated with a range of negative characteristics. Some outgroups, however, face harsher sentiments and treatment because they are depicted as hostile, dangerous, and threatening. We know from social cognition research that perception of threat interacts with various psychological processes. Threatening information is visually prioritized (e.g., Mulckhuysse & Dalmaijer, 2016), grabs our attention (e.g., Hedger, Gray, Garner, & Adams, 2016), and

can activate automatic behavior, such as avoidance or aggression. Such threat-related associations are also assumed to contribute to the emergence of the so-called *shooter bias*—the tendency to mistakenly shoot at unarmed Black men more often than at White men (Correll, Park, Judd, & Wittenbrink, 2002). The present research investigates whether the shooter bias generalizes to other threat-associated groups—namely Muslim and Arab men²—and whether it generalizes to populations outside North America. Furthermore, we explore how this bias may be evident in other forms of behavior, such as avoidance reactions.

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² The terms "Arab" and "Muslim" are often used as synonyms in the German public discourse (Shoorman, 2012). This is assumed to be due to an increased racialization of Muslims, a phenomenon also known as *ethnodoxo* (Karpov et al., 2012).

The shooter bias was first introduced by Correll et al. (2002). In a computer-based 'shoot/don't shoot task' they observed that participants shot faster at armed Black targets than at White targets and (mistakenly) shot unarmed Black targets more often than White targets. It is assumed that this is due to African Americans being frequently linked to the stereotype of being dangerous, violent, and threatening (Correll et al., 2002; Correll, Park, Judd, & Wittenbrink, 2007). Although many would argue that the shooter bias is a robust phenomenon (see Mekawi & Bresin, 2015, for a recent meta-analysis), most of this research has only been conducted in North America and is focused on Black versus White targets. This raises the question of whether the shooter bias is specific to the US—especially given its legal and cultural characteristics regarding the possession and use of guns—or whether it generalizes to other cultures. We suggest that if the shooter bias is indeed driven by threat-related stereotyping, we should observe a similar bias for other threat-associated groups outside the US context. In Europe, for example, Arab and Muslim men are often associated with security threats (e.g., Spruyt & van der Noll, 2016), criminal behavior (Dotsch, Wigboldus, Langner, & van Knippenberg, 2008), and negative stereotypes (Fischer, Greitemeyer, & Kastenmüller, 2007; Velasco González, Verkuyten, Weesie, & Poppe, 2008), which are communicated in the media (e.g., d'Haenens & Bink, 2007) and also in political campaigns (e.g., Verkuyten, 2013).

Yet, research has only begun to explore behavioral biases for other threat-associated target groups; we know of only three published studies conducted outside North America (Schofield, Unkelbach, & Denson, 2015; Unkelbach, Forgas, & Denson, 2008; Unkelbach, Goldenberg, Müller, Sobbe, & Spannaus, 2009). All three studies employed a modified 'shoot/don't shoot task' and manipulated target ethnicity (White vs. ambiguously non-White) as well as headgear (e.g., turbans). The results of these studies are not unambiguous: Unkelbach et al. (2008, 2009) found evidence of a shooter bias for targets wearing specific headgear—a so-called *turban effect*³ (Unkelbach et al., 2008). However, they did not find an overall effect of target ethnicity. Furthermore, Schofield et al. (2015) found an effect of ethnicity on shooting decisions only when participants were under the influence of alcohol, but not in a control group of sober participants. One explanation for the absence of ethnicity effects in these studies may be that the targets' ethnicity may not have been clearly identifiable, as targets were labeled as being vaguely non-White (Unkelbach et al., 2008; Unkelbach et al., 2009). A second explanation might be that turbans were so visually salient that subtle differences in ethnicity were less noticeable. Also, statistical power of these three studies was relatively low for the interpretation of null effects. Overall, it seems rather surprising that results from previous studies are so unequivocal, given the strong evidence of threat-related stereotypes regarding Arab and Muslim men (e.g., Spruyt & van der Noll, 2016). The present research aims at addressing methodological limitations of previous research by using extensively pretested stimulus material and by recruiting large samples in order to test for potentially small effects.

2. Overview of the present research

We conducted two high-powered experimental studies investigating the generalizability of the shooter bias regarding Arab-Muslim⁴ and Turkish targets. Experiment 1—a close replication—employed Correll et al.'s (2002) shooter task with Arab-Muslim and White targets.

³ Regarding the interpretation of the turban effect, we suspect that in Western societies, turbans may be associated with stereotypical images of specific groups (e.g., Taliban fighters), but not with Muslims in general. For example, Turkish immigrants, the most prominent Muslim population in Germany, usually do not wear prominent headgear.

⁴ We decided to use a combination of both terms—"Arab" and "Muslim"—in order to acknowledge that (a) these two social categories are often conflated in the public discourse and that (b) targets could be categorized into both social groups. This idea is supported by results from stimulus ratings, showing that Muslim prototypicality and Arab prototypicality are highly correlated ($r = .99, p < .001$).

Our aim was to investigate the generalizability of the effect and to estimate its effect size in a European context (Simons, 2014), while preserving the procedural details of the task. Experiment 2—a conceptual replication—is based on the idea that replications should test the broader validity of theories and that experimental operationalization should be adjusted to the specific context in order to provide a valid test of a theory (Stroebe & Strack, 2014). Hence, our second aim was to increase the ecological validity of the shooter task, by assessing a behavioral response that may be more relevant for the everyday experience of civilians.

The experiments were designed and conducted following the 'replication recipe' (Brandt et al., 2014). Methods, measures, design, and analyses of Experiments 1 and 2 were pre-registered. Pre-registration, experimental codes, data files, and analysis script are publicly accessible via Open Science Framework (<https://osf.io/rq6h2/>).

3. Experiment 1

In Experiment 1, participants performed the shooter task (Correll et al., 2002) with unarmed and armed White and Arab-Muslim targets. We expected participants' reaction times to be faster for armed Arab-Muslim targets than for armed White targets. Conversely, reaction times should be slower for unarmed Arab-Muslim targets than for unarmed White targets. Furthermore, we hypothesized that participants show more liberal response biases (i.e., shooting thresholds) for Arab-Muslim targets than for White targets.

3.1. Method

3.1.1. Participants

Targeted sample size was estimated via an a priori power analysis using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007). Based on a meta-analysis (Mekawi & Bresin, 2015), we estimated a sample size of at least $N = 156$ participants to detect a small effect ($d_z = 0.20$) for the difference between response biases c for White versus Arab-Muslim targets, given $\alpha = 0.05$ and $1 - \beta = 0.80$, using a one-tailed paired t -test. We recruited a total of 165 participants. The sample consisted of students from Hamburg University, participants attending a public open house event at Hamburg University, and participants recruited individually off-campus. Participants were either tested in the lab or with a mobile testing system. One participant was excluded from analyses due to performance below chance level in the shooter task,⁵ resulting in a final sample of 164 participants (72 female, 90 male, 2 not specified, $MD_{age} = 26, SD = 12.86, range = 18-72$).

3.1.2. Materials

3.1.2.1. Shooter task. We used the stimuli of the original task (Correll et al., 2002) as the basis for this experiment and replaced the original target faces with Arab-Muslim and White male faces (10 practice and 40 test stimuli per ethnic group), obtained via 'Google Images' searches. Arab-Muslim faces were selected based on results of an online pilot study, assessing prototypical features of Muslim men (see Supplement for procedural details, descriptive statistics, and analyses). We replaced the faces of Black targets with Arab-Muslim faces and modified the skin-tone of hands and arms to match the skin-tone of the Arab-Muslim faces, using Adobe Photoshop CS5. Accordingly, we replaced the faces of White targets with White faces from our image search. Ratings from three independent online samples revealed that Arab-Muslim targets were perceived as more prototypically Arab, more prototypically Muslim and more threatening than White targets.

⁵ Two participants had excessive timeouts in the shooter task, resulting in less than five trials per condition. The pattern of results does not change if they are excluded.

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